

### **HOW OTAKAMIRO HEADLAND FORMED**

1. Geological processes laid down layers of sediment under the sea millions of years ago. These layers were made up of a variety of rock fragments, which were cemented together with Waitemata sandstone. This sedimentary rock is called Piha Conglomerate.
2. A period of volcanic activity occurred 17 million years ago. As a result, volcanic material squeezed through gaps and fissures in the Piha conglomerate creating volcanic extrusions.
3. Around 1 million years ago this material was uplifted due to tectonic activity creating a headland.
4. Once this feature was exposed to marine processes (eg wave attack) and weathering it began to erode.

### **OTHER USEFUL INFORMATION ABOUT GEOLOGY**

- Soft sandstones are easily eroded by waves (in Piha conglomerate)
- Volcanic intrusions in Piha conglomerate are more resistant to wave erosion & weathering
- Faulting and uplift (ie tectonic activity) have altered the region significantly with changes in sea level.
- ½ million years ago, ice ages caused the sea levels to drop 100m lower than present
- sea levels returned to their present state 80,000 years ago
- Maori Bay – steep pillow lava cliffs dominate
- Muriwai – has a gentle slope of 1-5° and sand dunes dominate the back of the beach

SEDIMENT – Heavy volcanic iron sand (titanomagnetite) came from area north of Taranaki in periods of erosion in geologic past. It was brought down to the coast via rivers, such as the Waikato. However, this no longer occurs due to the many dams constructed along its length.

The lighter quartz, feldspar & silica sand is produced by local erosion (eg cliffs)

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